



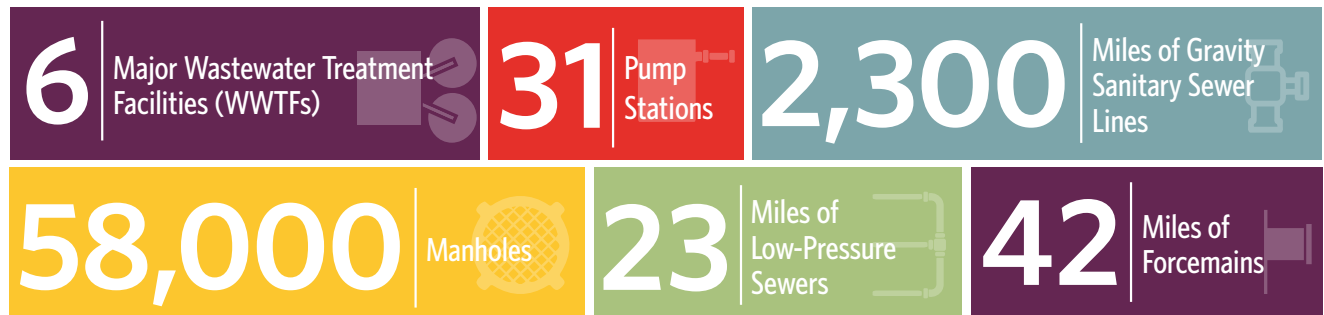
# JOHNSON COUNTY WASTEWATER INTEGRATED MANAGEMENT PLAN

## Phase 1

### Executive Summary

# SHAPING JOHNSON COUNTY WASTEWATER SERVICES FOR DECADES TO COME

Johnson County Wastewater (JCW) is responsible for providing sanitary sewer services for over 500,000 people in Johnson County, KS. To meet these commitments, JCW must continually manage, maintain, and improve a variety of infrastructure assets, including:



JCW has made great strides upgrading wastewater treatment facilities, optimizing collection system maintenance and renewal efforts, implementing wet weather management strategies and improving pumping facility performance. However, aging infrastructure, increasingly complex water quality issues, system-wide wet weather capacity concerns and growing service demands will continue to require major capital investments and will impact JCW's financial and management resources into the future. To continue providing cost effective, reliable services and enhancing the surrounding communities, JCW understands that future program improvements will need to be prioritized to address the most critical environmental and public health issues first, while allowing adequate time to gather the information needed to address longer term infrastructure needs.

In 2012, the US Environmental Protection Agency (EPA) recognized that when afforded flexibility to balance wastewater and stormwater improvements, municipalities can more efficiently leverage resources to make important, cost-effective environmental improvements that align with community priorities. This is accomplished through development of an Integrated Management Plan, or IMP, which will help JCW meet customer service goals, address critical infrastructure needs, and make progress towards achieving Clean Water Act requirements over the next 25 years. To support local agencies in these efforts, EPA has provided an implementation framework which outlines the planning process and clarifies the regulatory flexibilities available to utilities that develop these long-range, strategic infrastructure plans.

During **Phase 1**, JCW developed an initial 25-year investment schedule that will inform near-term regulatory agreements and actions and identified additional studies needed to more precisely forecast future projects and costs. In **Phase 2**, JCW will combine the results of the detailed planning studies with a more comprehensive assessment of community-wide priorities to revise the Phase 1 investment schedule.



## Key Accomplishments

- Defined System Needs Based on Current Understanding
- Stakeholder Engagement

- Initial Investment Prioritization
- Identified Data Gaps and Study Needs
- Long-Term Wet Weather Management Certainty



## Future Activities

- Incorporate Latest System Understanding and Studies
  - Mill Creek Regional WWTF
  - Indian Creek, Leawood, Tomahawk Watersheds
- Facility Asset Management

- Community Engagement
- Long-Range Investment Priorities and Scheduling
- Adaptive Management
- Annual Progress Reports and Five Year Updates



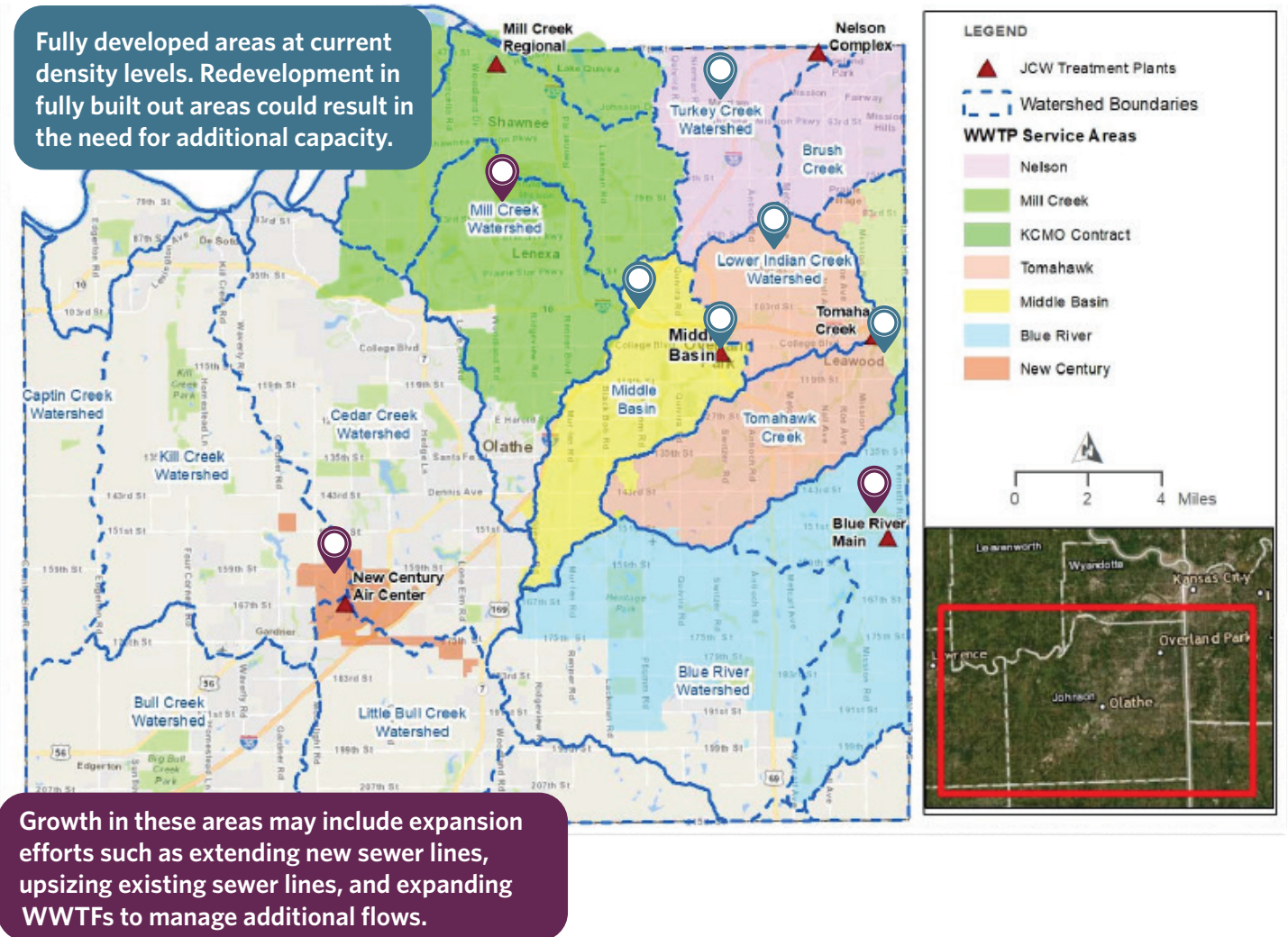


## SECTION I: UTILITY AND REGULATORY DRIVERS

JCW has identified a number of utility and regulatory-related issues that will drive future, system-wide investments aimed at improving overall system performance and customer service.



### Community Growth and Redevelopment



### Aging Infrastructure

JCW has kept many assets operable well beyond their design life through effective operations and maintenance. However, ongoing investments are required to address aging infrastructure and maintain customer service.



- 30% of Assets are Beyond Their Expected Useful Life
- 70% of Assets with Expected Useful Life Remaining



## Wet Weather Management

JCW is known as an industry leader in collection system management and performance due to demonstrated success in reducing the frequency and impact of wet weather events. Despite these efforts, wet weather management challenges remain in older and expanding portions of the collection system.

**JCW's innovative approach to wet weather flow management at the Tomahawk Creek WWTF will improve wet weather treatment capacity, comply with state regulatory requirements, and improve water quality while saving ratepayers \$180 million and reducing community disruption during construction.**



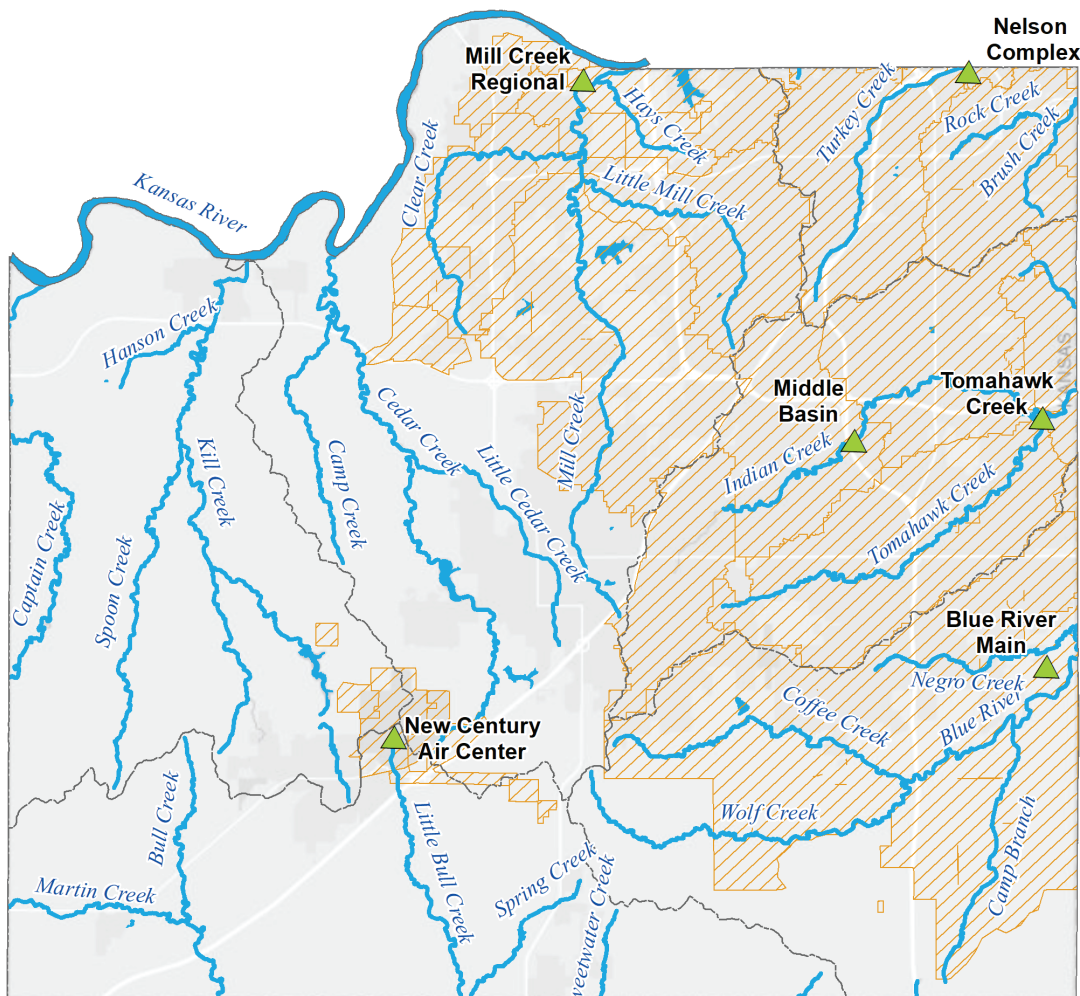
## Resource Recovery and Waste Acceptance

JCW has increasingly focused on identifying opportunities to beneficially reuse waste byproducts in order to reduce environmental impacts, reduce operating costs, and more efficiently use resources. New and upgraded facilities will include design provisions for future resource recovery and waste acceptance improvements.



## Regulatory Compliance

There are a number of impactful regulatory and water quality issues that will necessitate future improvements across JCW's service area. These include existing and evolving drivers related to the control and treatment of wet weather discharges, updates to water quality criteria, and state nutrient reduction efforts.

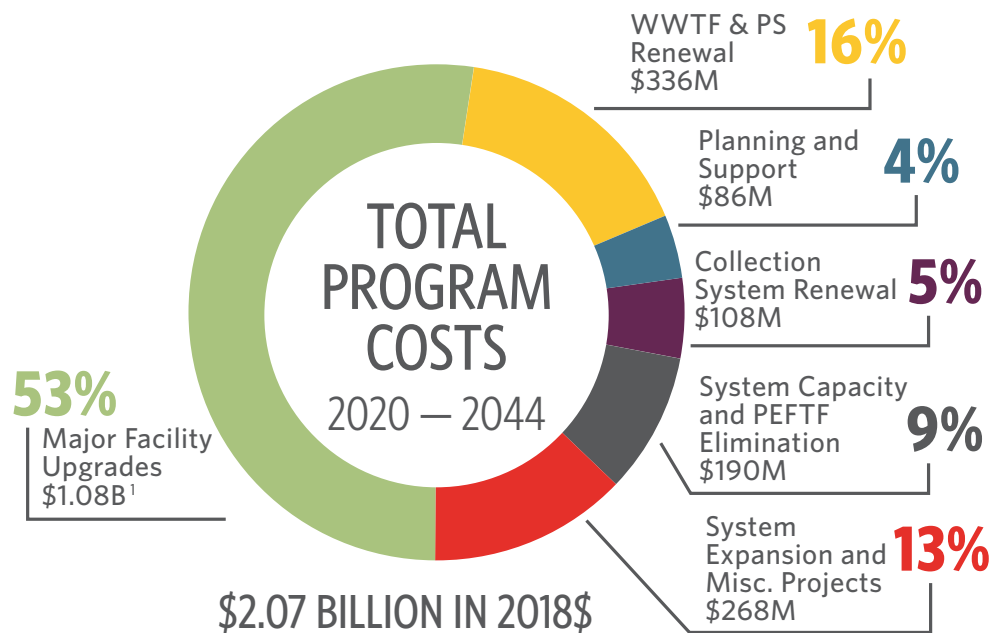


**Most of the streams in Johnson County are considered impaired and will likely drive future programmatic and capital improvements across the service area.**

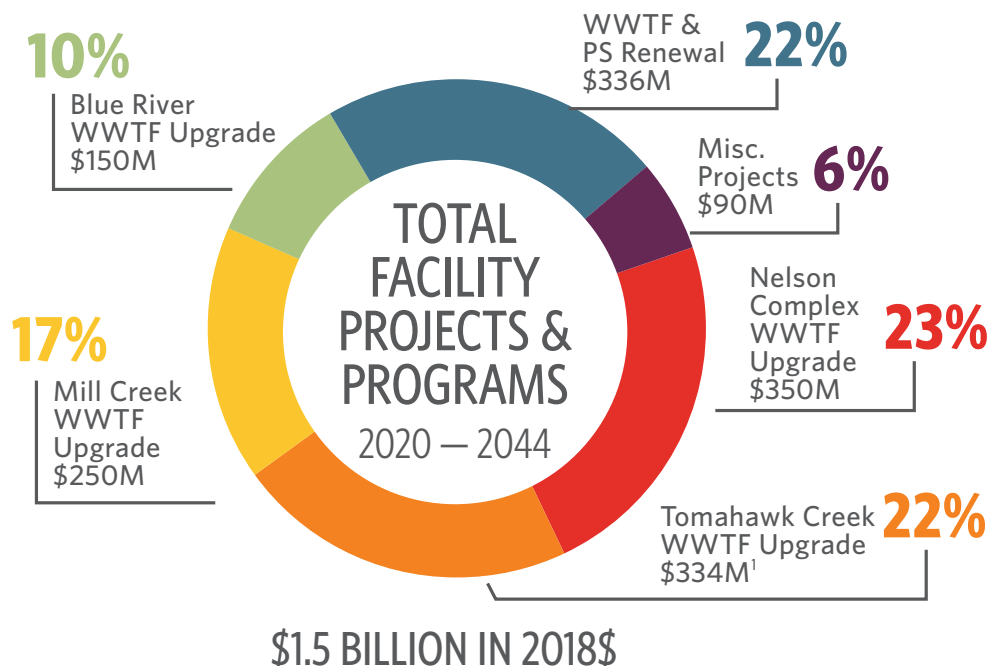


## SECTION II: PROGRAM NEEDS AND SOLUTIONS

JCW has identified near and long-term programmatic and capital improvement projects to address current and anticipated utility and regulatory needs. This effort identified approximately \$2.1 Billion (in 2018 dollars) in potential projects and solutions over the next 25 years, a majority (53%) of which are related to major WWTF upgrades to provide additional capacity, renew aging facilities and meet existing or anticipated regulatory requirements.



<sup>1</sup> Cost includes \$173 million expenditure for Tomahawk Creek WWTF prior to 2020.



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## SECTION III: COMMUNITY ENGAGEMENT

For Phase 1 of the IMP, JCW leveraged existing community engagement programs and relied on input from the Johnson County Board of County Commissioners to guide and affirm these priorities. Effective and meaningful outreach is a critical component of the integrated planning process, and JCW takes pride in providing transparent decision-making and keeping the community well-informed. Therefore, community engagement will be an ongoing process that continually informs goals and outcomes over time. As part of Phase 2 of the IMP, JCW will develop and implement an approach to more deeply engage the broader community.



**JCW is committed to building on previous public outreach efforts and will continue to engage the community and elected officials in the IMP process.**



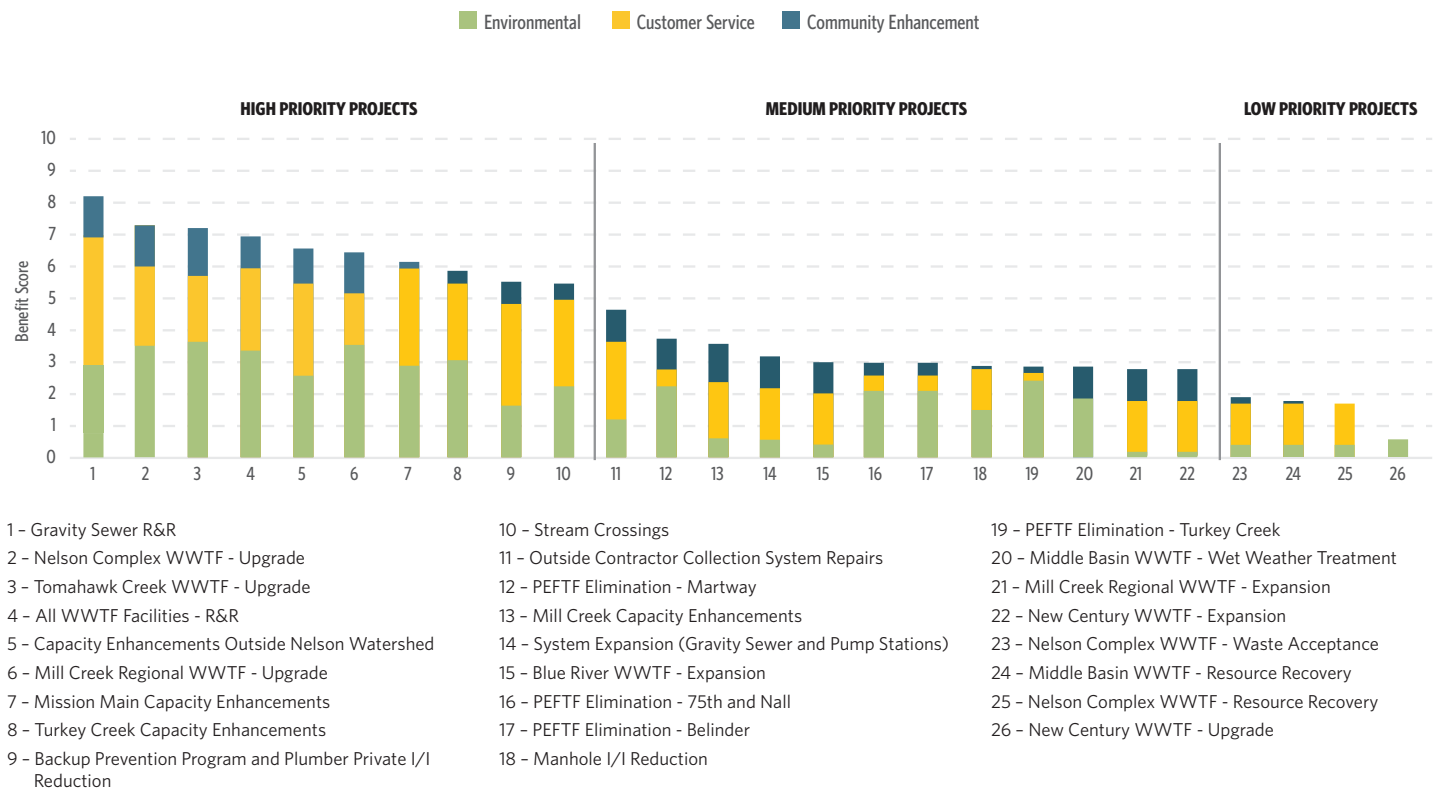
## SECTION IV: PROJECT AND PROGRAM PRIORITIZATION AND SCHEDULE

To prioritize and schedule future projects and costs identified in Section II, JCW used a decision-making tool to measure the anticipated environmental and community benefits that would be produced by each project. The decision analysis tool used weighted evaluation criteria that were aligned with JCW's community-supported mission statement. These criteria helped rank projects based on overall benefits to the community.

### Mission Statement

- Protecting our Environment
- Serving our Customers
- Enhancing our Communities

### Weighted Benefit Scores By Subcriteria



After quantifying potential project benefits, JCW worked with their engineering and financial consultants to develop an implementation schedule that prioritizes high benefit projects but also considers project delivery, management, and funding needs. The results of the prioritization effort helped JCW define an affordable implementation schedule for all identified projects over the next 25 years.

## Integrated Plan 25-Year Schedule

	CAPITAL COST (2018 \$ x Million)	YEARS 1 - 5 <sup>1</sup> 2020 - 2024	YEARS 6 - 10 2025 - 2029	YEARS 11 - 15 2030 - 2034	YEARS 16 - 20 2035 - 2039	YEARS 21 - 25 2040 - 2044
<b>Major Facility Upgrades</b>						
Tomahawk WWTF Upgrade	\$334 <sup>2</sup>					
Nelson Complex WWTF Upgrade	\$350					
Mill Creek WWTF Expansion and Upgrade	\$250					
Blue River WWTF Expansion	\$150					
Collection System Renewal with Public Sector I/I Reduction	\$108					
<b>WWTF &amp; PS Renewal</b>						
PEFTF Interim Upgrades	\$6					
WWTF & PS Renewal	\$330					
<b>System Capacity and PEFTF Elimination</b>						
Turkey Creek Storage	\$24					
Brush Creek Storage	\$25					
Mill Creek Storage	\$25					
Collection System Upgrades	\$61					
I/I Reduction	\$18					
PEFTF Elimination - Martway	\$18					
PEFTF Elimination - Turkey Creek	\$19					
PEFTF Elimination - 75th and Nall	— <sup>3</sup>					
PEFTF Elimination - Belinder	—					
Miscellaneous Projects/Expansion	\$268					
Planning and Support	\$86					
<b>TOTAL</b>	<b>\$2.07 Billion</b>					

1 IMP schedules based on Mill Creek Regional and Nelson Complex WWTFs NPDES Permits and Consent Order issuance by December 31, 2019. Schedules will be extended accordingly if issuance is delayed.

2 Cost includes \$173 million expenditure for Tomahawk Creek WWTF prior to 2020.

3 Addressed with Brush Creek Storage Project.

<b>LEGEND</b>	Major Facility Upgrades	WWTF & PS Renewal	Planning and Support	System Capacity and PEFTF Elimination	System Expansion and Misc. Projects	Collection System Renewal
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## SECTION V: ADAPTIVE MANAGEMENT AND FIVE-YEAR ACTION PLAN

The 25-year schedule reflects JCW's understanding of infrastructure needs and regulatory priorities over the next 25 years, with respect to information currently available. As JCW continues to implement their programs over time, new information that helps to better characterize system needs, solutions, and resources will be developed. Using the principles of adaptive management, JCW will periodically review and update the IMP to ensure investments are prioritized to achieve the most community benefits.

JCW intends to implement a long-term performance monitoring approach that measures both the resulting community and environmental benefits. The first phase of the IMP will begin with implementation of a 5-Year Action Plan.

### Integrated Plan 5-Year Schedule

	CAPITAL COST <sup>1</sup> (2018 \$ x Million)	YEAR 1 <sup>2</sup> 2020	YEAR 2 2021	YEAR 3 2022	YEAR 4 2023	YEAR 5 2024
Tomahawk Creek WWTF Construction	\$162					
Nelson Complex WWTF Upgrade - Design/Begin Construction	\$76					
Nelson Biosolids Improvements and Renewal	\$10.1					
Blue River WWTF Wet Weather Capacity Improvements	\$20.1					
Middle Basin FOG Receiving, Biosolids Improvements, and Renewal	\$4.2					
New Century WWTF Wet Weather Capacity Improvements	\$4.1					
Mill Creek WWTF Planning Study	\$0.75					
PEFTF Disinfection and Pumping Upgrades	\$5.6					
Turkey Creek Pump Station Renewal	\$4.0					
Belinder Pump Station Renewal	\$2.8					
Collection System Renewal with Public Sector I/I Reduction	\$28.6					
Mill Creek Conveyance Improvements and Storage Facility	\$28.8					
Dykes Branch Pump Station and Forcemain Improvements	\$10.1					
Leawood Service Area Improvements	\$15.5					
Other WWTF and Pump Station Renewal	\$38					
Private I&I Source Disconnections	\$2.3					
Tomahawk Creek Service Area Planning/Optimization	\$0.5					
Leawood Service Area Planning/Optimization	\$0.5					
Collection System and Facilities Asset Management Programs	\$2.5					
Planning and Support	\$14.9					
Regional Service Enhancements	\$28.2					
Other Projects and Programs	\$13					
<b>TOTAL</b>	<b>\$473</b>					

1 Costs do not include project expenditures that occur prior to 2020 or 2024. The total capital costs for the Tomahawk WWTF Upgrade and Nelson WWTF Upgrade projects are \$334 Million and \$350 Million, respectively.

2 IMP schedules based on Mill Creek Regional and Nelson Complex WWTFs NPDES Permits and Consent Order issuance by December 31, 2019. Schedules will be extended accordingly if issuance is delayed.

LEGEND	Major Facility Upgrades	WWTF & PS Renewal	Planning and Support	Collection System Renewal
	System Capacity and PEFTF Elimination	System Expansion and Misc. Projects		

## SUMMARY

While JCW has invested millions in infrastructure asset improvements over the last several years, all while meeting their mission to protect the environment, serve their customers and enhance their communities, JCW will continue to face system-wide aging infrastructure challenges that will worsen if left unaddressed. As a result of the analyses conducted as part of this IMP, JCW now has a plan to implement improvements that will help address community growth and redevelopment, aging infrastructure, wet weather management, resource recovery and waste acceptance, and regulatory compliance over the near and long term future.

IMP development is a continual process. The next phase of this IMP, expected to be complete in 2022, will combine the results of the detailed planning studies with a more comprehensive assessment of community-wide priorities. This flexible and iterative process allows JCW to revise and reprioritize IMP projects and improvements to reflect immediate needs while continuing to provide safe and high-quality service to the community.